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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,322	11/14/2003	Brian A. Hamman	QNX003	5104

7590 04/13/2006

PATENT DOMININ LP  
555 REPUBLIC DRIVE  
SUITE 200  
PLANO, TX 75074

EXAMINER
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VORTMAN, ANATOLY

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/715,322

Applicant(s)

HAMMAN, BRIAN A.

Examiner

Anatoly Vortman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 46-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 46-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 53 and 54 (dependent on claim 53) are objected to under 37 CFR 1.75(c) as being in improper form, because the multiple dependent claim 53 is simultaneously referring to claim 47 and to claim 13. A multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). In addition, said claim 13 had been cancelled and no longer pending in the instant application. Accordingly, claims 53 and 54 have not been further treated on the merits.

Further, claims 46 and 62 are objected because of the recitation of the clause “capable of mating”. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. See MPEP 2111.04[R-3].

Further, claim 48 recites: “first conducting material”, which lacks antecedent basis. Evidently “first heat conducting material” should have been recited.

### *Claim Rejections - 35 USC § 102*

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2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 46, 52, and 58-62, are rejected under 35 U.S.C. 102(b) as being anticipated by US/6,234,240 to Cheon.

Regarding claims 46 and 58-61, Cheon disclosed (Fig. 2,3) a liquid cooling system for an electronic system, comprising: a heat transfer unit (14, 22) operating under the peltier effect, the heat transfer unit including a cold region (18) and a hot region (16) generating heat, wherein the cold region (18) is capable of mating with a processor (10), a conduit (56, 58) coupled to the hot region (16) and dissipating heat by transporting cooled liquid (C), the cooled liquid transforming into heated liquid in response to receiving the heat from the hot region (16) and a heat exchange unit (34, 44) coupled to the conduit (56, 58) and receiving the heated liquid: the heat exchange unit generating the cooled liquid in response to receiving the heated liquid.

Regarding claim 52, Cheon disclosed (Fig. 2,3) that said heat transfer unit (14, 22) further comprises: an inlet coupled to the conduit (58) for receiving the cooled liquid from the heat exchange unit (34, 44) and thermally coupling the cooled liquid to the hot region (16); an outlet of the heat transfer unit (14, 22) coupled to the conduit (56) for receiving heated liquid from the conduit coupled to the hot region (16) and directing the heated liquid to the heat exchange unit (34, 44); and wherein the inlet is disposed below the outlet (Fig. 3) for enhancing convective flow of the liquid (inherently).

Regarding claim 62, the method steps recited in the claim are inherently necessitated by the device structure as taught by Cheon.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 47-51 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Law et al., (Law).

Regarding claims 47-51, Chen disclosed all, but the first and second heat conducting materials operating under peltier effect, each having the first and second cold and hot regions, respectively, said heat conducting materials are connected at a junction for mating with the processor, wherein, said first and second cold regions are disposed in close proximity to each other, thus forming cold region for thermal coupling to the heat generating component(s), and said first and second hot regions are also disposed in close proximity to each other, thus forming a hot region for thermal coupling to the conduit.

Law disclosed (Fig. 1, 3, 9) a cooling arrangement comprising: the first and second heat conducting materials (any two of four materials corresponding to regions (904, 906, 908, 910)) operating under peltier effect (i.e. thermocouples, column 10, lines 35-40) and connected at a junction (Fig. 9) for mating with a processor (901), each said heat conducting materials (904,

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906, 908, 910) having the first and second cold regions, respectively, and the first and second hot regions, respectively (like in Fig. 3), and, wherein, said first and second cold regions are disposed in close proximity to each other, thus forming cold region for thermal coupling to the heat generating component (901), and said first and second hot regions are also disposed in close proximity to each other, thus forming a hot region for thermal coupling to a heat sink (318) (column 10, lines 23-51).

Since inventions of Chen and Law are from the same field of endeavor (cooling systems utilizing peltier devices), the purpose of using a plurality of peltier heat transfer materials taught by Law would be recognized in the cooling system of Chen.

It would have been obvious to a person of ordinary skill in the cooling art at the time the invention was made to substitute the peltier heat transfer material (14) of Chen with a plurality of peltier heat transfer materials of Law, in order to provide appropriate cooling for different regions of the processor (see Law, column 10, lines 41-51).

Regarding claims 55-57, Law further teaches (Fig. 1 and 2) that the peltier heat transfer materials (108, 208, 210) are semiconductor solid state peltier-effect devices (column 4, lines 22-25 and column 5, lines 34-48), wherein the cold region and the hot region of the peltier-effect device are parts of the electron conducting materials (204, 212, 214) coupled to a power source (220) and embedded in a substrate of the semiconductor material (208, 210) (materials (212) and (214) constitute a substrate of the semiconductor materials (208, 210), as shown on Fig. 2).

### ***Conclusion***

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 7022553, 6705089, 6658861, 6586835, 6196003, 5987893, 5731954, and 5456081 disclosed various cooling arrangements for electronic systems utilizing peltier devices.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anatoly Vortman  
Primary Examiner  
Art Unit 2835

A handwritten signature in black ink, appearing to be 'A Vortman', with a long horizontal line extending to the right.

AV